GRAM ACCOUNT AND MACHINE HEALTH FOR THE GOLD AND JEWELLERY INDUSTRY

Where the grams went. What every machine is telling you.

CARI-Gold reads the weighings your job cards already carry and the machine records you load. For cast jobs it shows the grams not accounted for at each weighed step. For any of the fifteen machine kinds, load its records to see the result; where a possible fault is found, the page names it.



BUILT FOR JEWELLERY WORKSHOPS AND FACTORIES · CASTING HOUSES · REFINERIES · BULLION AND MINTS · CHAIN MAKERS

The gram account
cast jobs, step by step

Melting and stock
melter, continuous caster

Investment casting
mixer, burnout, caster

Forming and heat
mill, annealing, kiln

Cutting and marking
engraving and lasers

Finishing and refining
polish, plate, refine

THE PROBLEM

A job total hides the step. Machines drift between services.

A gold floor weighs its metal on every job card, and many of its machines keep logs. The people on the floor are busy making jewellery; no one has the hours to set those records side by side. What is missing is a reading of each step and of each machine.

Weighings stay on the job card

Charge, tree, pieces and sprues are weighed job by job. The figures are rarely set side by side, step against step.

The stock total does not show the step

Stock-taking shows the month's shortfall. The total does not show which job or which step to check.

An entry slip looks like a loss

A missing or inconsistent entry sits inside the totals and is counted as gold gone.

A furnace loses heat slowly

Insulation and door seals can wear between services. The controller holds the temperature, so the change stays out of sight.

A vacuum pulls a little slower

A pump or a seal can deteriorate while the caster still completes its cycles. The record of each cycle can show the change.

A bath shifts load by load

Bath condition and electrical contacts can change between services. Each load looks like the last one.



WHAT THE OWNER NEEDS TO KNOW

Which job, which step, which machine, and how urgent.

No one can stand beside fifteen kinds of machine all day, and no single job card shows a loss by itself. The gram account shows which weighed steps need a look. The floor page shows what the machine records bring up and which machine to inspect, in plain words your team can act on.

No new sensors and no new network. CARI-Gold works from the job-card weighings and the machine records you load.

CARI-GOLD AT A GLANCE

Weighings and machine records in. The gram account and the floor page out.

CARI-Gold takes what the floor already writes down and returns two pages. The gram account follows a cast job from charge to finished pieces. The floor page reads every machine whose records you load, from the melter to the refinery.

YOU LOAD · START WITH

Weighings, one line per cast job
Charge, cast tree, cut pieces, returned button and sprues, finished pieces and recovered gold. A weighing you did not take is left empty.

Each machine's records
Two sets: a good run, and the run you want looked at, in the table or log layout listed for that machine.

ADD IF YOU HAVE IT

Machine name
Lets the page show a linked machine fault beside a flagged step.

Job date
Lets the page group jobs by month.

Your recipe, if it differs
Zinc share, melt temperature, atmosphere and investment weight.

Your gold rate
Typed by you; no price is built in.

→

YOU RECEIVE

The gram account
Every cast job in three steps: melt and pour, cutting, finishing. Grams not accounted for at each; melt and pour and finishing set against their usual range.

Jobs to look at, flagged
A banner on every job with a step above its usual range.

Entries to check, marked
Weighings that do not add up, and differences smaller than usual, are marked separately.

Totals per job and per month
In grams, and in money at the rate you typed.

The machine floor
One row per machine: a fault named, a change seen, could not judge, or nothing raised. A fault or a change carries an urgency grade.

Fault next to grams
If the job card names a machine of a kind linked to the flagged step, its possible fault appears beside the grams. A link between records, not proof of cause.

Pages to print and files for accounts
The results print from the browser; the gram account also leaves as two spreadsheet files.

Read-only
CARI-Gold reads records. It never writes to a machine or its controller.

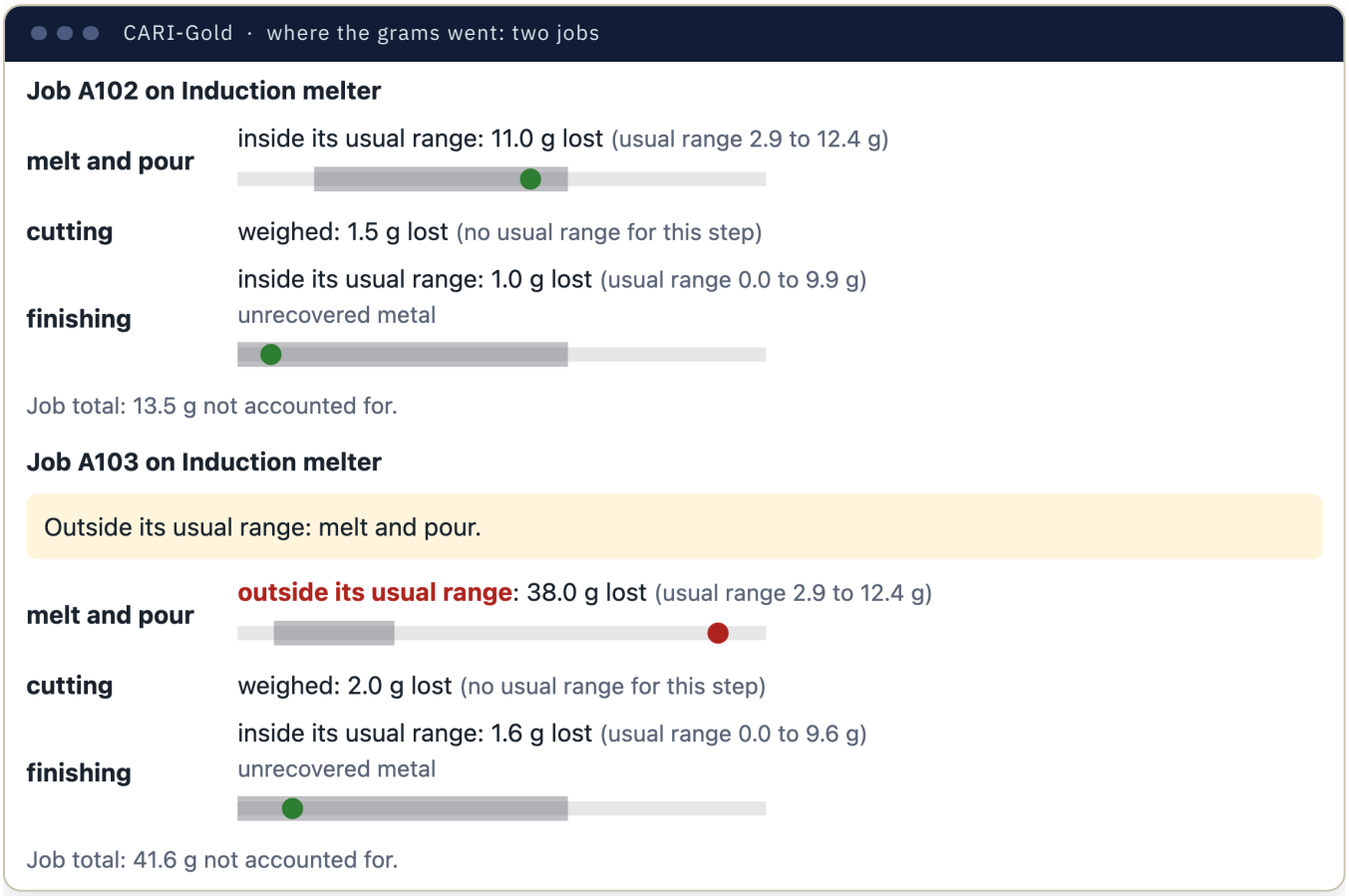
On your own PC
It runs on your own computer and opens in your browser. Your records are processed there and stay with you.

Where to read next. Reading a job: page 4. Reading the floor: page 6. Every machine and its findings: pages 7 to 10.

THE GRAM ACCOUNT

Where the grams went, job by job and step by step.

Each cast job is split into three steps. For melt and pour and for finishing, the grams not accounted for are drawn against the usual range for a charge like yours. Cutting is shown in grams. A step above its range puts a banner on the job.



Which job needs a look? Dot: grams not accounted for at the step. Grey band: the usual range. Green: inside the band. Red: above. Amber: below. Cutting: grams only.

Three steps a job

Melt and pour, cutting and finishing, each from the weighings on either side of it.

A usual range

The band shown for melt and pour and for finishing, for your own charge, alloy and recipe.

A banner on the job

A job with a step above its range stands out at once, with the step named.

A total per job

The grams not accounted for over the steps that were weighed.

Your recipe, your range. Give the zinc share, the melt temperature, the atmosphere and the investment weight of a job and its usual range follows them. Leave them out and the range assumed is stated on the screen.

THE GRAM ACCOUNT · ENTRIES, MONTHS AND ACCOUNTS

A slip in the weighing book is not a loss of gold.

Entries to check are marked separately from steps above their usual range. A weighing you did not take stays blank. Each month is totalled for the accounts desk.

CARI-Gold · where the grams went: a job with an entry to check

Job A105 on Polisher 1

Outside its usual range: finishing.

melt and pour	inside its usual range: 10.0 g lost (usual range 2.9 to 12.4 g)
cutting	**weighings do not add up** (more metal came out than went in: 10.0 g)
finishing	**outside its usual range**: 19.0 g lost (usual range 0.0 to 9.9 g) unrecovered metal

Job total: 29.0 g not accounted for.

Which entry needs checking? One job, two different results. Cutting: the weighings do not add up, so the entry is to be checked. Finishing: above its usual range.

Weighings that do not add up

The step is marked as an entry to check and is kept out of the money total.

Not weighed is not guessed

An empty weighing shows its step as not weighed. Nothing is filled in.

A weighing to check

A difference smaller than usual is marked in amber, so the entry is looked at.

CARI-Gold · where the grams went: per month

Per month

month	jobs	jobs outside range	grams not accounted for
2026-09	3	1	68.6
2026-10	2	1	38.0

What does the accounts desk receive? Add a date to each job and the account is totalled month by month.

Value at the rate you type

Enter your rate per gram of the metal weighed to see step, job and month values.

Month by month

Jobs, jobs with a step above its range, and grams not accounted for, for each month in the file.

Files for the accounts desk

Two spreadsheet files: one line per job step, and one line per month.

THE WHOLE FLOOR

Fifteen kinds of machine. One floor page.

The floor page reads every machine whose records you load, from the melter to the refinery, and puts the findings in one table. It serves a casting floor, a rolling line and a refinery alike.



The floor CARI-Gold reads. The weighings of a job run along the top; the machines are grouped by the work they do. Each number is a machine on the pages that follow.

CARI-Gold · machine floor: four machines

Machine floor

machine	result
Annealing furnace 1 Annealing furnace	**a reason to look**: work thermocouple drifting from the reference (check or replace it) **Fix at next stop** Plan the repair for the next planned stop.
Burnout furnace 1 Burnout furnace	**a reason to look**: heat loss high (insulation or door seal) **Fix at next stop** Plan the repair for the next planned stop.
Polisher 1 Electro-polisher	**a reason to look**: voltage set low: the piece etches instead of polishing **Fix at next stop** Plan the repair for the next planned stop.
Laser marker 1 Laser marker	nothing raised in this record

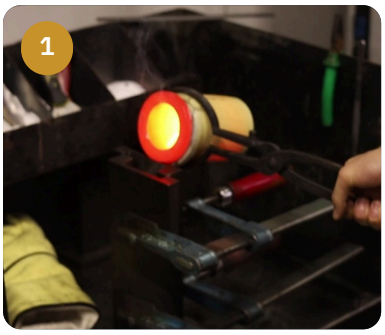
Which machine first? The order is: named fault, change seen, could not judge, nothing raised. A fault or a change carries its urgency grade.

Your floor, your names. Load as many machines of each kind as you run, under the names your floor uses. Each gets its own row.

MELTING, STOCK AND INVESTMENT

From the melt to the fired flask.

The equipment used in melting, stock casting and flask preparation, each read from its own records.



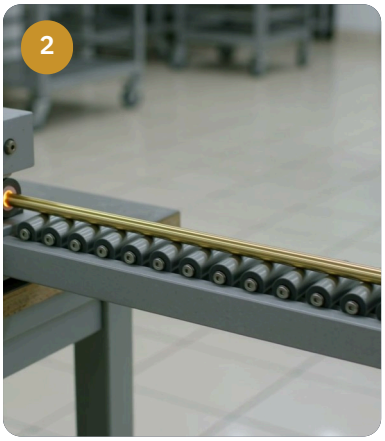
Induction melter

The furnace that melts the charge, read heat by heat.

WHAT IT TELLS YOU

- **Lining worn**
- **Coil cooling water** flow low
- Melt taken **hotter than its target**
- **Capacitor bank** fault
- **Ground leak** current high: lining or a damp coil
- **Dip probe** reading low

READS The power-supply panel, the cooling-water log and the melt book of each heat.



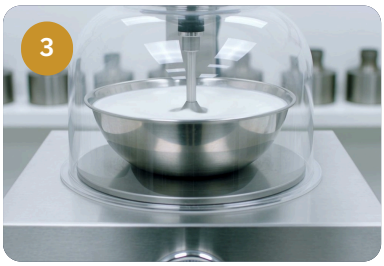
Continuous caster

Rod, wire and strip stock withdrawn from the melt through a cooled die.

WHAT IT TELLS YOU

- **Cooling-water** flow low
- **Die cooling impaired**
- **Protective gas** low
- **Strand slipping** in the drive
- Withdrawal programme **differs from the recipe**
- **Die worn**
- **Withdrawal force up**
- Melt **held hot** or **held cold**
- **Melt level** low

READS Die temperature, cooling-water inlet temperature and flow, drive motor current, melt temperature, gas flow and pull stroke, beside the recipe of the job.



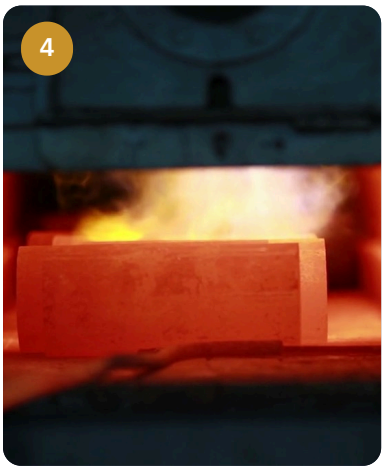
Investment mixer

The vacuum mixer that prepares the investment for the flask.

WHAT IT TELLS YOU

- **Vacuum pump weak**
- **Vacuum leak**

READS The vacuum gauge and the timing of each mix.



Burnout furnace

The furnace that burns out the invested flask, read firing by firing.

WHAT IT TELLS YOU

- **Heat loss high**: insulation or door seal
- **Thermocouple failed**
- **Control fault**: power switch or control loop
- **Less heat needed** than usual, as a change seen
- **Heating power low**: elements or supply
- Firing **did not follow the approved programme**
- **Heavier load** than usual

READS The controller log of each firing.

CASTING, ROLLING AND HEAT

The caster, the mill and the furnaces.

The machine that fills the flask, the mill that brings strip to thickness, the furnace that softens it between passes and the kiln used for enamel firing.



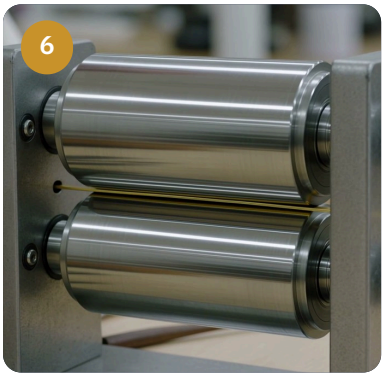
Vacuum caster

The casting machine itself, cycle by cycle against its recipe.

WHAT IT TELLS YOU

- **Pump slow**
- **Leak**
- **Flask colder** than the recipe
- **Melt poured colder** than the recipe
- **Slow pump-down**
- **Damp flask**
- **Argon below** the recipe

READS Vacuum readings of the cycle, argon pressure, flask and melt temperatures, with the recipe set points. Optional: the caster's leak test.



Rolling mill

Strip and sheet rolled to thickness, pass by pass.

WHAT IT TELLS YOU

- **Roll eccentricity**
- **Roll gap opened**: gap drift or roll wear
- **Stand less stiff**: neck bearings or a loosened stand

READS Roll force, thickness error and thickness ripple of each pass, with the pass schedule.



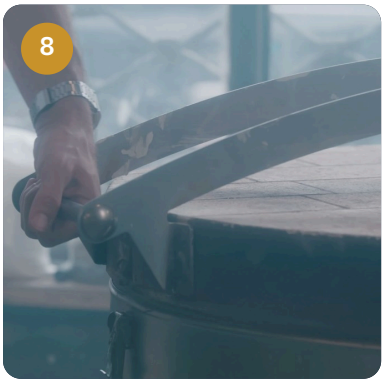
Annealing furnace

The furnace that softens metal between passes; its temperature reading must be true.

WHAT IT TELLS YOU

- **Work thermocouple drifting** from the reference: check the work thermocouple

READS The work and reference thermocouples, with the drift per day your plant allows.



Enamel kiln

The kiln used for enamel firing, read from one day of its controller log.

WHAT IT TELLS YOU

- **Thermocouple failed**
- **More heat lost**: insulation or door seal
- **Heater switch stuck**
- **Thermocouple slow**
- **Heating power low**: elements or supply
- Programme run **is not the approved one**

READS One day of the controller log.

ENGRAVING AND LASERS

The spindle and the beam.

The engraving spindle, the marking laser and the stone-cutting laser, each read from the records of its own jobs.



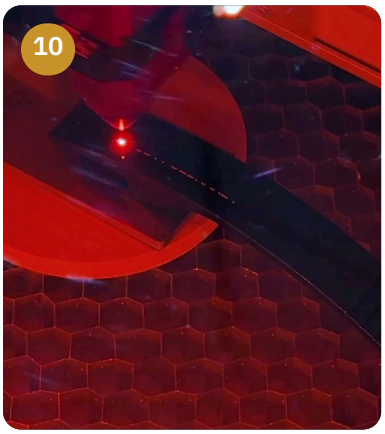
CNC engraving

The engraving and milling centre, read from the log of each job.

WHAT IT TELLS YOU

- **Chatter**
- **Front spindle bearing** worn
- **Axis position loop** poorly tuned
- **Worn tool** still cutting
- Spindle or holder **out of balance**
- **Loose workholding**
- **Ball-screw backlash**
- **Chipped tool**
- **Tools wearing out fast**
- **Tool run-out**

READS The machine's own log of each engraving job.



Laser marker

Hallmarks, logos and serial marks, mark after mark.

WHAT IT TELLS YOU

- **Laser source weak**
- **Scanner drifting**
- **Window or lens dirty**
- Laser output **above its setting**
- **Work height wrong**: defocus
- **Mark not legible**

READS Source power and the position offset of each mark. Optional: the line width from the vision system.



Diamond laser cutter

The laser that saws and shapes stones, cut after cut.

WHAT IT TELLS YOU

- **Pump diodes ageing**
- **Chiller flow** low
- **Fume extraction** low
- **Optics dirty**
- Laser **cannot reach its setting**
- **Stage error**
- **Q-switch unstable**
- **Beam quality or focus** to be checked

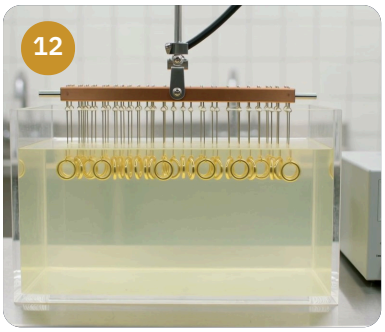
READS Pump current, output power, chiller flow, diode temperature, stage following error, extraction flow, cut time and depth. Optional: power at the work.

Named, with where to look first. Each finding points to what to inspect: the holder, the bearing, the lens, the chiller. The technical annexe lists every finding with what to check.

FINISHING, PLATING AND REFINING

The finish, the plate and the refinery.

Polishing, mass finishing and plating, load after load; and the refining vessel with its fume scrubber, batch after batch.



Electro-polisher

The bath that gives the final shine, batch by batch.

WHAT IT TELLS YOU

- **Voltage set low**: etching risk
- **Bath hotter** than usual
- Bath **metal-loaded**, or a **poor contact**
- **Voltage set high**: pitting risk
- **Bath cold**

READS Cell voltage, current and the weight removed from each batch, weighed before and after. Optional: the bath temperature.



Mass finisher

Vibratory bowl finishing, load by load.

WHAT IT TELLS YOU

- **Media worn**
- **Drive weak**
- **Bowl overloaded**
- **Rinse water blocked**: sludge building
- **Drive set high**

READS Bowl acceleration, the weight removed from each load, weighed before and after, and the parts loaded, with the weight of media in the bowl. Optional: a sludge reading.



Plating bath

Rhodium and gold plating, load after load.

WHAT IT TELLS YOU

- **Contact resistance up** at the rack or busbar
- Bath **hotter** or **colder** than its set point
- **Bath level** low
- **Anode passivation**
- **Filter loop flow low**: filter or pump
- **Free acid** high

READS Cell voltage, current, bath temperature, filter flow, level and the acid assay of each load.



Gold refining

Aqua regia dissolving and its fume scrubber, batch after batch.

WHAT IT TELLS YOU

- **Scrubber performance down**: fan, caustic or pump
- **Scrubber fan pressure** low
- **Scrubber liquid flow** low
- **Vessel colder** than its set point
- **Slow or incomplete dissolving**
- **Scrubber pH** low
- **Too little nitric acid** in the mix
- **Agitator current** low

READS The fume reading at the stack, fan pressure, acid flows, vessel temperature, agitator current, scrubber pH and flow, with the karat and weight of each batch.

WHAT YOU GET · ANSWERS YOUR TEAM CAN ACT ON

Four plain answers. One of them for every machine.

Every machine you load gets exactly one answer, in the same words whatever the machine. A fault or a change also carries an urgency grade for maintenance planning; your team decides when to open the machine.

A reason to look
A possible fault is named in plain words, with where to look.

Fix at next stop

Change seen
A change from the machine's own normal is reported. No fault is named.

Keep watching

Could not judge
The page identifies a missing or invalid reading, or a problem with the records.

says what to fix

Nothing raised
No fault or change was flagged in these records.

no flag

Fault next to grams

If the job card names a machine of a kind linked to the flagged step, the page shows any fault named for that machine beside the grams. The link does not mean the machine caused the difference; it tells your team where the two records meet.



Where do the two pages meet? One line: the job and its step, the machine and its fault.

MACHINE KINDS LINKED TO MELT AND POUR

Induction melter, vacuum caster, continuous caster, burnout furnace, investment mixer.

MACHINE KINDS LINKED TO FINISHING

Electro-polisher, mass finisher, plating bath.

Every other machine kind is read on the floor page on its own and is not linked to a job step.

Two desks, one line
The accounts desk sees the grams. The maintenance lead sees the machine. Both see the same sentence.

Pages you can print
The gram account and the floor page print from the browser without the entry boxes, for the floor walk and the review.

Read-only. CARI-Gold never writes to a machine or its controller. Your floor stays in your team's hands.

HOW IT FITS

Your job cards. Your PC. Your records stay with you.

CARI-Gold works beside what you already run. It needs no connection to a machine, no change to a controller and no new hardware.

1
Paste the weighings
One line per job, pasted from your spreadsheet or chosen as a file.

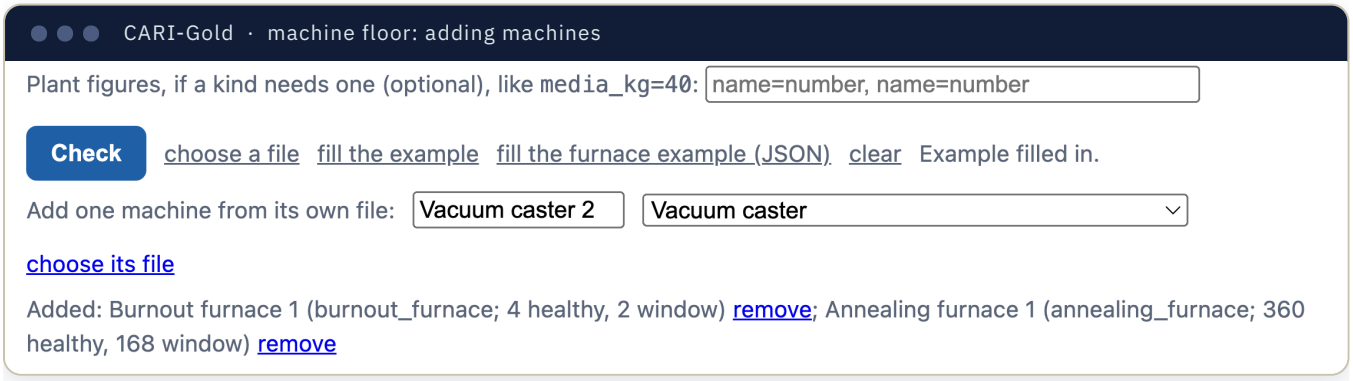
2
Read the gram account
Every job, every step, with the jobs to look at flagged.

3
Add your machines
All together in one file, or one machine at a time from its own file.

4
Read the floor page
Faults named, urgency graded, and a fault shown beside a flagged job where the two meet.



The weighings, pasted as they are kept: one line per job. A weighing that was not taken is left empty.



Machines are added by name and kind, each from its own file, and join the same floor table.

Files as they are
Spreadsheet pastes, comma, tab and semicolon files are all read.

A guide per machine
The readings each kind needs, with a template file to start from.

Plain refusals
A file that cannot be read is sent back with words that say what to fix.

Stays with you
It runs on your own PC, in your browser. Your records are processed there.

WHERE IT WORKS

Wherever gold is melted, worked or refined.

The same application serves a single workshop and a multi-line factory. The gram account applies to cast jobs; the floor page applies to any of the machine kinds you run, so a refinery or a mint uses the floor page on its own.



Jewellery workshops and factories

From casting to setting under one roof. The gram account for every cast job, and the casting, engraving, laser, finishing and plating machines on one floor page that the owner and the floor head both read.



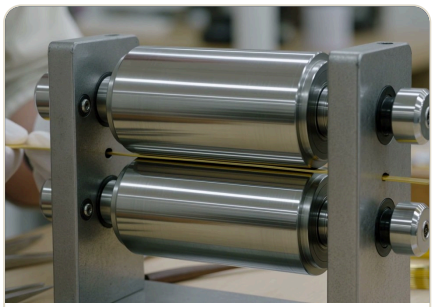
Casting houses

Flask after flask, for many customers. The melter, the mixer, the burnout furnace and the caster are read cycle by cycle, and every job carries its own gram account.



Refineries

Dissolving batches and a fume scrubber that must keep working. The refining vessel and its scrubber are read batch by batch, with the scrubber, the acid mix and the vessel named in the findings. The melter for the refined metal has its own row.



Bullion and mints

Melting, continuous casting, rolling, annealing and marking. Each loaded melter, caster, mill, furnace or marker gets its own row on the floor page.



Chain makers

Wire and strip are only as good as the caster, the mill and the annealing furnace behind them. Those machines, and the plating and finishing lines after the chain machine, each get a row.

One shop or many lines

Name your machines as your floor names them. Run as many of each kind as you have.

Your alloys, your recipes

Each job's usual range follows its own charge and recipe.

Your records, your PC

Records are processed on your own computer. Results print for the floor walk and the monthly review.

START WITH A WALKTHROUGH

Book a walkthrough on your own PC. See your own pages.

Bring cast-job weighings, or two record sets for each machine you choose: a good run and the run to review. We set CARI-Gold up with your team on your computer and read the page for the records you bring. Your records stay with you.

1

You keep ready

One line per cast job from your job cards, or a good run and a run to review for each machine. Machine records alone are enough for a floor walkthrough.

2

We set up together

Your machine names and kinds, your recipe where it differs, and your gold rate if you want money shown.

3

You read

The gram account for the jobs you bring, the floor page for the machines you bring, and pages to print.

WRITE TO US

contact@carimo.tech

WEB

carimotech.com

PART OF THE FAMILY

CARI-Chiller watches the cooling plant. CARI-Loops finds the loops and valves that need you.